L4 ANSWER 1 OF 4 MEDLINE on STN
AN 2003314113 IN-PROCESS
DN 22726392 PubMed ID: 12842017
TI **TRPM5** is a voltage-modulated and Ca(2+)-activated monovalent selective cation channel.
AU Hofmann Thomas; Chubanov Vladimir; Gudermann Thomas; Montell Craig
CS Department of Biological Chemistry, Johns Hopkins University School of Medicine, 725 North Wolfe Street, Baltimore, MD 21215, USA.
NC EY10852 (NEI)
SO CURRENT BIOLOGY, (2003 Jul 1) 13 (13) 1153-8.
Journal code: 9107782. ISSN: 0960-9822.
CY England: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS IN-PROCESS; NONINDEXED; Priority Journals
ED Entered STN: 20030708
Last Updated on STN: 20030723
AB The **TRPM** subfamily of mammalian **TRP** channels displays unusually diverse activation mechanisms and selectivities. One member of this subfamily, **TRPM5**, functions in **taste receptor** cells and has been reported to be activated through G protein-coupled receptors linked to phospholipase C. However, the specific mechanisms regulating **TRPM5** have not been described. Here, we demonstrate that **TRPM5** is a monovalent-specific cation channel with a 23 pS unitary conductance. **TRPM5** does not display constitutive activity. Rather, it is activated by stimulation of a receptor pathway coupled to phospholipase C and by IP(3)-mediated Ca(2+) release. Gating of **TRPM5** was dependent on a rise in Ca(2+) because it was fully activated by Ca(2+). Unlike any previously described mammalian **TRP** channel, **TRPM5** displayed voltage modulation and rapid activation and deactivation kinetics upon receptor stimulation. The most closely related protein, the Ca(2+)-activated monovalent-selective cation channel **TRPM4b**, also showed voltage modulation, although with slower relaxation kinetics than **TRPM5**. Taken together, the data demonstrate that **TRPM5** and **TRPM4b** represent the first examples of voltage-modulated, Ca(2+)-activated, monovalent cation channels (VCAMs). The voltage modulation and rapid kinetics provide **TRPM5** with an excellent set of properties for participating in signaling in **taste receptors** and other excitable cells.

L4 ANSWER 2 OF 4 MEDLINE on STN
AN 2003243452 IN-PROCESS
DN 22650589 PubMed ID: 12765699
TI Making sense with **TRP** channels: store-operated calcium entry and the ion channel **Trpm5** in **taste receptor** cells.
AU Perez Cristian A; Margolskee Robert F; Kinnamon Sue C; Ogura Tatsuya
CS Department of Physiology & Biophysics, Howard Hughes Medical Institute, Mount Sinai School of Medicine, New York University, New York, NY 10029, USA.. Cristian.Perez@rockefeller.edu
NC DC 00766 (NIDCD)
DC 03055 (NIDCD)
DC 03155 (NIDCD)
DC 05140 (NIDCD)
SO CELL CALCIUM, (2003 May-Jun) 33 (5-6) 541-9.
Journal code: 8006226. ISSN: 0143-4160.
CY Scotland: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS IN-PROCESS; NONINDEXED; Priority Journals
ED Entered STN: 20030528

Last Updated on STN: 20030719

AB The sense of taste plays a critical role in the life and nutritional status of organisms. During the last decade, several molecules involved in taste detection and transduction have been identified, providing a better understanding of the molecular physiology of **taste receptor** cells. However, a comprehensive catalogue of the **taste receptor** cell signaling machinery is still unavailable. We have recently described the occurrence of calcium signaling mechanisms in **taste receptor** cells via apparent store-operated channels and identified **Trpm5**, a novel candidate taste transduction element belonging to the mammalian family of transient receptor potential channels. **Trpm5** is expressed in a tissue-restricted manner, with high levels in gustatory tissue. In taste cells, **Trpm5** is co-expressed with taste-signaling molecules such as alpha-gustducin, Ggamma(13), phospholipase C beta(2) and inositol 1,4,5-trisphosphate receptor type III. Biophysical studies of **Trpm5** heterologously expressed in Xenopus oocytes and mammalian CHO-K1 cells indicate that it functions as a store-operated channel that mediates capacitative calcium entry. The role of store-operated channels and **Trpm5** in capacitative calcium entry in **taste receptor** cells in response to bitter compounds is discussed.

L4 ANSWER 3 OF 4 MEDLINE on STN
AN 2003071120 MEDLINE
DN 22469025 PubMed ID: 12581520
TI Coding of sweet, bitter, and umami tastes: different receptor cells sharing similar signaling pathways.
CM Comment on: Cell. 2003 Feb 7;112(3):283-4
AU Zhang Yifeng; Hoon Mark A; Chandrashekar Jayaram; Mueller Ken L; Cook Boaz; Wu Dianqing; Zuker Charles S; Ryba Nicholas J P
CS Howard Hughes Medical Institute, Department of Biology, University of California, San Diego, La Jolla, CA 92093, USA.
SO CELL, (2003 Feb 7) 112 (3) 293-301.
Journal code: 0413066. ISSN: 0092-8674.
CY United States
DT Commentary
Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200303
ED Entered STN: 20030214
Last Updated on STN: 20030319
Entered Medline: 20030318

AB Mammals can taste a wide repertoire of chemosensory stimuli. Two unrelated families of receptors (T1Rs and T2Rs) mediate responses to sweet, amino acids, and bitter compounds. Here, we demonstrate that knockouts of **TRPM5**, a taste **TRP** ion channel, or PLCbeta2, a phospholipase C selectively expressed in taste tissue, abolish sweet, amino acid, and bitter taste reception, but do not impact sour or salty tastes. Therefore, despite relying on different receptors, sweet, amino acid, and bitter transduction converge on common signaling molecules. Using PLCbeta2 taste-blind animals, we then examined a fundamental question in taste perception: how taste modalities are encoded at the cellular level. Mice engineered to rescue PLCbeta2 function exclusively in bitter-receptor expressing cells respond normally to bitter tastants but do not taste sweet or amino acid stimuli. Thus, bitter is encoded independently of sweet and amino acids, and **taste receptor** cells are not broadly tuned across these modalities.

L4 ANSWER 4 OF 4 MEDLINE on STN
AN 2002667923 MEDLINE
DN 22292154 PubMed ID: 12368808

TI A transient receptor potential channel expressed in **taste receptor** cells.

AU Perez Cristian A; Huang Liquan; Rong Minqing; Kozak J Ashot; Preuss Axel K; Zhang Hailin; Max Marianna; Margolskee Robert F

CS Howard Hughes Medical Institute, Mount Sinai School of Medicine, New York University, Box 1677, 1425 Madison Avenue, New York, New York 10029, USA.

NC DC00310 (NIDCD)
DC03055 (NIDCD)
DC03155 (NIDCD)

SO NATURE NEUROSCIENCE, (2002 Nov) 5 (11) 1169-76.
Journal code: 9809671. ISSN: 1097-6256.

CY United States

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 200212

ED Entered STN: 20021114
Last Updated on STN: 20021217
Entered Medline: 20021205

AB We used differential screening of cDNAs from individual **taste receptor** cells to identify candidate taste transduction elements in mice. Among the differentially expressed clones, one encoded **Trpm5**, a member of the mammalian family of transient receptor potential (**TRP**) channels. We found **Trpm5** to be expressed in a restricted manner, with particularly high levels in taste tissue. In taste cells, **Trpm5** was coexpressed with taste-signaling molecules such as alpha-gustducin, Ggamma13, phospholipase C-beta2 (PLC-beta2) and inositol 1,4,5-trisphosphate receptor type III (IP3R3). Our heterologous expression studies of **Trpm5** indicate that it functions as a cationic channel that is gated when internal calcium stores are depleted. **Trpm5** may be responsible for capacitative calcium entry in **taste receptor** cells that respond to bitter and/or sweet compounds.

L2 ANSWER 1 OF 1 MEDLINE on STN
AN 2001504152 MEDLINE
DN 21438010 PubMed ID: 11535825
TI **Regulation** of **melastatin**, a TRP-related protein, through interaction with a cytoplasmic isoform.
AU Xu X Z; Moebius F; Gill D L; Montell C
CS Department of Biological Chemistry, The Johns Hopkins University School of Medicine, Baltimore, MD 21205, USA.
NC EY10852 (NEI)
SO PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, (2001 Sep 11) 98 (19) 10692-7.
Journal code: 7505876. ISSN: 0027-8424.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
OS GENBANK-AY046396
EM 200111
ED Entered STN: 20010913
Last Updated on STN: 20030105
Entered Medline: 20011101
AB The TRP (transient receptor potential) superfamily includes a group of subfamilies of channel-like proteins mediating a multitude of physiological signaling processes. The TRP-melastatin (TRPM) subfamily includes the putative tumor suppressor melastatin (MLSN) and is a poorly characterized group of TRP-related proteins. Here, we describe the identification and characterization of an additional TRPM protein TRPM4. We reveal that TRPM4 and MLSN each mediate Ca(2+) entry when expressed in HEK293 cells. Furthermore, we demonstrate that a short form of MLSN (MLSN-S) interacts directly with and suppresses the activity of full-length MLSN (MLSN-L). This suppression seems to result from the inhibition of translocation of MLSN-L to the plasma membrane. We propose that control of translocation through interaction between MLSN-S and MLSN-L represents a mode for regulating ion channel activity.

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YOU HAVE REQUESTED DATA FROM 19 ANSWERS - CONTINUE? Y/(N):y

L1 ANSWER 1 OF 19 MEDLINE on STN
AN 2003401923 MEDLINE
DN 22821189 PubMed ID: 12940649
TI Diffuse neuroaxonal involvement in mucolipidosis IV as assessed by proton magnetic resonance spectroscopic imaging.
AU Bonavita Simona; Virta Anette; Jeffries Neal; Goldin Ehud; Tedeschi Gioacchino; Schiffmann Raphael
CS Second Division of Neurology, Second University of Naples, Italy.
SO JOURNAL OF CHILD NEUROLOGY, (2003 Jul) 18 (7) 443-9.
Journal code: 8606714. ISSN: 0883-0738.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200309
ED Entered STN: 20030828
Last Updated on STN: 20030910
Entered Medline: 20030909
AB Mucolipidosis IV is an autosomal recessive disorder caused by mutations in MCOLN1, which codes for mucolipin, a **transient receptor potential protein**. In order to investigate brain metabolic abnormalities in mucolipidosis IV, we studied 14 patients (11

children, 3 adults) by proton magnetic resonance spectroscopic imaging. The ratios of N-acetylaspartate/ creatine-phosphocreatine and N-acetylaspartate/choline-containing compounds in patients with mucolipidosis IV were significantly reduced in all regions of interest except the parietal gray matter and thalamus. The ratios of choline-containing compounds/creatine-phosphocreatine was not significantly reduced in patients compared with controls. The ratio of N-acetylaspartate/creatine-phosphocreatine were significantly lower (P = .005) in the more neurologically impaired patients compared with the least impaired. For every region of interest, except for parietal gray matter, the ratio of N-acetylaspartate/creatine-phosphocreatine was lower in the more motorically impaired patient group. There was no difference for the ratio of N-acetylaspartate/creatine-phosphocreatine between younger and older patients. These findings suggest that mucolipidosis IV is largely a static developmental encephalopathy associated with diffuse neuronal and axonal damage or dysfunction. Mucolipin deficiency impairs motor more than sensory central nervous system pathways.

L1 ANSWER 2 OF 19 MEDLINE on STN
AN 2003326844 MEDLINE
DN 22740393 PubMed ID: 12856738
TI Evidence for the expression of **transient receptor potential proteins** in guinea pig airway smooth muscle cells.
AU Ong Hwei L; Brereton Helen M; Harland M Lyn; Barritt Greg J
CS Department of Medical Biochemistry, School of Medicine, Flinders University, Adelaide, South Australia, Australia.
SO RESPIROLOGY, (2003 Mar) 8 (1) 23-32.
Journal code: 9616368. ISSN: 1323-7799.
CY Australia
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200308
ED Entered STN: 20030715
Last Updated on STN: 20030815
Entered Medline: 20030814
AB OBJECTIVE: The present study investigates the expression of transient receptor potential (TRPC) proteins in airway smooth muscle (ASM) cells in order to determine whether these proteins may be candidate molecular counterparts of plasma membrane Ca2+-permeable channels involved in the contraction of ASM. METHODS: Expression of TRPC mRNA was detected using specific primers and RT-PCR. Expression of the TRPC1, TRPC3 and TRPC6 proteins was detected using antibodies in immunoprecipitation and Western blot. RESULTS: Guinea pig ASM cells exhibited thapsigargin- and acetylcholine-initiated Ca2+ inflow but none by 1-oleoyl-2-acetyl-sn-glycerol. mRNA encoding each of the TRPC1 to TRPC6 proteins was detected in ASM cells. mRNA encoding TRPC1, TRPC3, TRPC4 and TRPC6 was detected in ASM cells at a concentration approximately equivalent to that in guinea pig brain. mRNA encoding TRPC2 and TRPC5 was more abundant in ASM cells than in brain. The TRPC1 protein, but not the TRPC3 or TRPC6 proteins, was detected in extracts of ASM cells, while all three proteins were detected in brain. CONCLUSION: The results provide evidence for a low level of expression of the TRPC1 to TRPC6 proteins in ASM cells. These proteins may function as store-operated Ca2+ and/or second messenger-activated non-selective cation channels in ASM cells.

L1 ANSWER 3 OF 19 MEDLINE on STN
AN 2003199843 IN-PROCESS
DN 22605411 PubMed ID: 12719655
TI **Transient receptor potential protein** as a novel non-voltage-gated Ca2+ entry channel involved in diverse

pathophysiological functions.
AU Inoue Ryuji; Hanano Toyohisa; Shi Juan; Mori Yasuo; Ito Yushi
CS Department of Pharmacology, Graduate School of Medical Sciences, Kyushu University, Fukuoka 812-8582, Japan.. inouery@pharmaco.med.kyushu-u.ac.jp
SO J Pharmacol Sci, (2003 Apr) 91 (4) 271-6.
Journal code: 101167001. ISSN: 1347-8613.
CY Japan
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS IN-PROCESS; NONINDEXED; Priority Journals
ED Entered STN: 20030430
Last Updated on STN: 20030730
AB In both excitable and non-excitable cells, many chemical and physical stimuli elicit continuous Ca2+ influx through yet poorly understood pathways distinct from voltage-gated Ca2+ channels, leading to activation and modulation of various cellular functions. The molecular entities of these pathways have long been enigmatic, but important clues have been obtained from recent investigations on the Drosophila transient receptor potential (TRP) protein and its mammalian homologues. TRP proteins function as non-voltage-gated Ca2+ channels that are constitutively active or gated by a multitude of stimuli including light, pheromones, lipids, temperature, acid, osmolarity, and oxidative stress; and thus they may play divergent roles in cell pathophysiology. This short paper briefly overviews the current knowledge about these channels with a main focus on their possible linkage with in vivo function.

L1 ANSWER 4 OF 19 MEDLINE on STN
AN 2002622933 MEDLINE
DN 22268128 PubMed ID: 12381092
TI Cloning and functional expression of a novel splice variant of rat TRPC4.
AU Satoh Eisaku; Ono Kyoichi; Xu Feng; Iijima Toshihiko
CS Department of Pharmacology, Akita University School of Medicine, Japan.
SO Circ J, (2002 Oct) 66 (10) 954-8.
Journal code: 101137683. ISSN: 1346-9843.
CY Japan
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200306
ED Entered STN: 20021017
Last Updated on STN: 20030606
Entered Medline: 20030605
AB **Transient receptor potential protein**
4 (TRPC4) has been identified as a candidate for the capacitative calcium entry (CCE) channels, but its functional role is still controversial. Using a RT-PCR technique, a novel isoform of TRPC4, designated rTRPC4gamma, was isolated. It was nearly identical to full-length rTRPC4 (rTRPC4alpha), except that it lacked 53 nucleotides that correspond to the predicted linker between the second and third transmembrane domain of rTRPC4alpha, and its mRNA was expressed in brain and heart. This splice variant encoded a potential protein of 400 residues that consists of an amino-terminal cytoplasmic domain and 2 transmembrane domains by a frameshift mutation. When rTRPC4gamma cDNA was transiently transfected to HEK-293 cells, thapsigargin (TG)-induced Ca2+ entry was suppressed significantly. By contrast, expression of rTRPC4 a did not affect TG-induced Ca2+ entry. To investigate the subcellular localization, plasmids were constructed with green fluorescence protein (GFP) as an amino-terminal fusion to rTRPC4 variants. GFP-rTRPC4gamma fusion protein, unlike GFP-rTRPC4alpha, was localized to the cytoplasm as well as plasma membrane. These results suggest that rTRPC4gamma may play a modulatory role in CCE channel activity in the brain and heart.

L1 ANSWER 5 OF 19 MEDLINE on STN
AN 2002378363 MEDLINE
DN 22119696 PubMed ID: 12123831
TI Structural domains required for channel function of the mouse **transient receptor potential protein** homologue TRP1beta.
AU Engelke Michael; Friedrich Olaf; Budde Petra; Schafer Christina; Niemann Ursula; Zitt Christof; Jungling Eberhard; Rocks Oliver; Luckhoff Andreas; Frey Jurgen
CS Universitat Bielefeld, Fakultat fur Chemie, Biochemie II, Universitatsstrasse 25, D-33615, Bielefeld, Germany.
SO FEBS LETTERS, (2002 Jul 17) 523 (1-3) 193-9.
Journal code: 0155157. ISSN: 0014-5793.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200209
ED Entered STN: 20020719
Last Updated on STN: 20020918
Entered Medline: 20020917
AB **Transient receptor potential proteins** (TRP) are supposed to participate in the formation of store-operated Ca(2+) influx channels by co-assembly. However, little is known which domains facilitate the interaction of subunits. Contribution of the N-terminal coiled-coil domain and ankyrin-like repeats and the putative pore region of the mouse TRP1beta (mTRP1beta) variant to the formation of functional cation channels were analyzed following overexpression in HEK293 (human embryonic kidney) cells. MTRP1beta expressing cells exhibited enhanced Ca(2+) influx and enhanced whole-cell membrane currents compared to mTRP1beta deletion mutants. Using a yeast two-hybrid assay only the coiled-coil domain facilitated homodimerization of the N-terminus. These results suggest that the N-terminus of mTRP1beta is required for structural organization thus forming functional channels.

L1 ANSWER 6 OF 19 MEDLINE on STN
AN 2002289955 MEDLINE
DN 22026120 PubMed ID: 12030534
TI Receptor-operated Ca2(+)-permeable nonselective cation channels in vascular smooth muscle: a physiologic perspective.
AU Large William A
CS Department of Pharmacology and Clinical Pharmacology, St. George's Hospital Medical School, London, United Kingdom.. w.large@sghms.ac.uk
SO JOURNAL OF CARDIOVASCULAR ELECTROPHYSIOLOGY, (2002 May) 13 (5) 493-501.
Ref: 48
Journal code: 9010756. ISSN: 1045-3873.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, TUTORIAL)
LA English
FS Priority Journals
EM 200210
ED Entered STN: 20020528
Last Updated on STN: 20021019
Entered Medline: 20021018
AB This article summarizes the literature on receptor-operated Ca2(+)-permeable nonselective cation channels in vascular smooth muscle cells. One of these conductances, the P2X1 receptor, is a classic ligand-gated channel, but others are likely to be mediated via G-protein-coupled receptors. The most studied receptor-operated channel in vascular myocytes is the norepinephrine-evoked nonselective cation

channel in rabbit portal vein myocytes. The data regarding the transduction mechanisms and biophysical properties of whole-cell and single-channel currents in this preparation are described. The channels have a conductance of 20 to 25 pS and complex kinetic behavior with at least two open and two closed states. These channels are activated by norepinephrine and acetylcholine via G-protein-coupled receptors linked to phospholipase C and by diacylglycerol (DAG). The action of DAG occurs by a mechanism independent of protein kinase C, but other kinases may mediate the responses to norepinephrine and DAG. In addition, activation of tyrosine kinases leads to opening of this channel. Other vasoconstrictors, such as endothelin, vasopressin, serotonin, and angiotensin II, open Ca2(+)-permeable nonselective cation channels, but there may be differences between these conductances and the norepinephrine-evoked channels. A homologue of the **transient receptor potential protein** (TRPC6) is an essential component of the norepinephrine-activated channel in rabbit portal vein, and it is likely that this family of proteins plays an important role in mediating Ca2+ influx in vascular smooth muscle.

L1 ANSWER 7 OF 19 MEDLINE on STN
AN 2002082041 MEDLINE
DN 21667496 PubMed ID: 11808331
TI The TRP proteins, a rapidly expanding Ca2+ entry channel family and a new molecular target for drug development.
AU Inoue Ryuji; Ito Yushi; Mori Yasuo
CS Department of Pharmacology, Graduate School of Medical Science, Kyushu University.
SO NIPPON RINSHO. JAPANESE JOURNAL OF CLINICAL MEDICINE, (2002 Jan) 60 (1) 18-24. Ref: 21
Journal code: 0420546. ISSN: 0047-1852.
CY Japan
DT Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, TUTORIAL)
LA Japanese
FS Priority Journals
EM 200202
ED Entered STN: 20020128
Last Updated on STN: 20020227
Entered Medline: 20020226
AB There is a rapidly expanding protein family which encompasses a broad repertoire of cation-selective channels serving as a continuous Ca2+ entry pathway into the cell. The **transient receptor potential protein** (TRP) and its relatives, which were originally thought to be Ca (2+)-permeable cation channels activated upon the stimulation of G-protein coupled and tyrosine kinase receptors, are now becoming promising candidates mediating a variety of cellular responses and functions such as mechano/chemo-transduction, oxidative stress, and cell survival/proliferation. This short paper briefly overviews the current knowledge about these proteins as a new target for drug discovery and development.

L1 ANSWER 8 OF 19 MEDLINE on STN
AN 2001492758 MEDLINE
DN 21426412 PubMed ID: 11535132
TI A diacylglycerol-activated Ca2+ channel in PC12 cells (an adrenal chromaffin cell line) correlates with expression of the TRP-6 (**transient receptor potential) protein**
.
AU Tesfai Y; Brereton H M; Barritt G J
CS Department of Medical Biochemistry, School of Medicine, Faculty of Health Sciences, Flinders University, G.P.O. Box 2100, Adelaide, South Australia,

5001, Australia.
SO BIOCHEMICAL JOURNAL, (2001 Sep 15) 358 (Pt 3) 717-26.
Journal code: 2984726R. ISSN: 0264-6021.
CY England: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200110
ED Entered STN: 20010906
Last Updated on STN: 20011029
Entered Medline: 20011025
AB The structures, and mechanisms of activation, of plasma membrane intracellular-messenger-activated, non-selective cation channels in animal cells are not well understood. The PC12 adrenal chromaffin cell line is a well-characterized example of a nerve cell. In PC12 cells, 1-oleolyl-2-acetyl-sn-glycerol (OAG), a membrane-permeant analogue of diacylglycerol, initiated the inflow of Ca(2+), Mn(2+) and Sr(2+). Acetylcholine and thapsigargin initiated the inflow of Ca(2+) and Mn(2+), but not of Sr(2+). The activation of bivalent cation inflow by OAG: (i) was mimicked by another membrane-permeant diacylglycerol analogue, 1,2-dioctanoyl-sn-glycerol, but not by the membrane-impermeant analogue 1-stearoyl-2-arachidonyl-sn-glycerol; (ii) was not blocked by staurosporin or chelerythrine, inhibitors of protein kinase C; (iii) was enhanced by RHC80267 and R50922, inhibitors of diacylglycerol lipase and diacylglycerol kinase respectively; and (iv) was inhibited by extracellular Ca(2+). When OAG was added after acetylcholine, the effect of OAG on Ca(2+) inflow was over-and-above that induced by acetylcholine. 2-Aminoethyl diphenylborate (2-APB) inhibited Ca(2+) inflow initiated by either acetylcholine or thapsigargin, but not that initiated by OAG. Flufenamic acid inhibited OAG-initiated, but not acetylcholine-initiated, Ca(2+) and Mn(2+) inflow. OAG-initiated Ca(2+) inflow was less sensitive to inhibition by SK&F96365 than acetylcholine-initiated Ca(2+) inflow. In polyadenylated RNA prepared from PC12 cells, mRNA encoding TRP (**transient receptor potential**) **proteins** 1-6 was detected by reverse transcriptase (RT)-PCR, and in lysates of PC12 cells the endogenous TRP-6 protein was detected by Western blot analysis. It is concluded that PC12 cells express a diacylglycerol-activated, non-selective cation channel. Expression of this channel function correlates with expression of the TRP-3 and TRP-6 proteins, which have been shown previously to be activated by diacylglycerol when expressed heterologously in animal cells [Hofmann, Obukhov, Schaefer, Harteneck, Gudermann, and Schultz (1999) Nature (London) 397, 259-263].

L1 ANSWER 9 OF 19 MEDLINE on STN
AN 2001469045 MEDLINE
DN 21405054 PubMed ID: 11513973
TI Maitotoxin activates an endogenous non-selective cation channel and is an effective initiator of the activation of the heterologously expressed hTRPC-1 (transient receptor potential) non-selective cation channel in H4-IIE liver cells.
AU Brereton H M; Chen J; Rychkov G; Harland M L; Barritt G J
CS Department of Medical Boichemistry, School of Medicine, Flinders University, Adelaide, SA, Australia.
SO BIOCHIMICA ET BIOPHYSICA ACTA, (2001 Aug 22) 1540 (2) 107-26.
Journal code: 0217513. ISSN: 0006-3002.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200109
ED Entered STN: 20010830
Last Updated on STN: 20010924

Entered Medline: 20010920

AB The structures and mechanisms of activation of non-selective cation channels (NSCCs) are not well understood although NSCCs play important roles in the regulation of metabolism, ion transport, cell volume and cell shape. It has been proposed that TRP (**transient receptor potential**) **proteins** are the molecular correlates of some NSCCs. Using fura-2 and patch-clamp recording, it was shown that the maitotoxin-activated cation channels in the H4-IIE rat liver cell line admit Ca(2+), Mn(2+) and Na(+), have a high selectivity for Na(+) compared with Ca(2+), and are inhibited by Gd(3+) (half-maximal inhibition at 1 microM). Activation of the channels by maitotoxin was inhibited by increasing the extracellular Ca(2+) concentration or by inclusion of 10 mM EGTA in the patch pipette. mRNA encoding TRP proteins 1, 2 and 3 at levels comparable with those in brain was detected using reverse transcriptase-polymerase chain reaction in poly(A)(+) RNA prepared from H4-IIE cells and freshly-isolated rat hepatocytes. In H4-IIE cells transiently transfected with cDNA encoding hTRPC-1, the expressed hTRPC-1 protein was chiefly located at intracellular sites and at the plasma membrane. Cells expressing hTRPC-1 exhibited a substantial enhancement of maitotoxin-initiated Ca(2+) inflow and a modest enhancement of thapsigargin-initiated Ca(2+) inflow (measured using fura-2) and no enhancement of the highly Ca(2+)-selective store-operated Ca(2+) current (measured using patch-clamp recording). In cells expressing hTRPC-1, maitotoxin activated channels which were not found in untransfected cells, have an approximately equal selectivity for Na(+) and Ca(2+), and are inhibited by Gd(3+) (half-maximal inhibition at 3 microM). It is concluded that in liver cells (i) maitotoxin initiates the activation of endogenous NSCCs with a high selectivity for Na(+) compared with Ca(2+); (ii) TRP proteins 1, 2 and 3 are expressed; (iii) maitotoxin is an effective initiator of activation of heterologously expressed hTRPC-1 channels; and (iv) the endogenous TRP-1 protein is unlikely to be the molecular counterpart of the maitotoxin-activated NSCCs nor the highly Ca(2+)-selective store-operated Ca(2+) channels.

L1 ANSWER 10 OF 19 MEDLINE on STN
AN 2001386794 MEDLINE
DN 21334158 PubMed ID: 11440466
TI Recent developments in non-excitable cell calcium entry.
AU Elliott A C
CS School of Biological Sciences, University of Manchester, Manchester, UK.. acelliot@mail1.mcc.ac.uk
SO CELL CALCIUM, (2001 Aug) 30 (2) 73-93. Ref: 151
Journal code: 8006226. ISSN: 0143-4160.
CY Scotland: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, ACADEMIC)
LA English
FS Priority Journals
EM 200109
ED Entered STN: 20011001
Last Updated on STN: 20011001
Entered Medline: 20010927

AB Influx of calcium into cells following stimulation of cell surface receptors is a key process controlling cellular activity. However, despite intensive research, there is still no consensus on precisely how calcium entry is controlled in electrically no n-excitable cells. In particular, the regulation of depletion-activated or 'capacitative' calcium entry continues to be a focus of debate. Work published in the last 2 years has lent new impetus to the so-called 'conformational coupling' theory, although evidence for the existence of soluble messengers between the ER and the plasma membrane also continues to

appear. In addition, there remains disagreement on whether intra-store [Ca(2+)] has to fall below a threshold before Ca(2+)entry is activated. A further major question is the identity of the putative depletion-operated Ca(2+)channel or channels. Here discussion has largely focussed on whether homologue(s) of the Drosophila TRP ('**Transient Receptor Potential**') **protein** is/are the elusive channel, or at least a part of it. Finally, it remains possible that Ca(2+)entry mechanisms other than depletion-activated channels may be important in agonist-evoked Ca(2+)influx. This commentary summarizes recent developments in the field, and highlights both current debates and critical unsolved questions.

L1 ANSWER 11 OF 19 MEDLINE on STN
AN 2001363427 MEDLINE
DN 21317769 PubMed ID: 11207380
TI **Transient receptor potential protein** mRNA expression in rat substantia nigra.
AU Sylvester J B; Mwanjewe J; Grover A K
CS Department of Biology, McMaster University, Hamilton, Ontario, Canada.
SO NEUROSCIENCE LETTERS, (2001 Mar 9) 300 (2) 83-6.
Journal code: 7600130. ISSN: 0304-3940.
CY Ireland
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200108
ED Entered STN: 20010813
Last Updated on STN: 20010813
Entered Medline: 20010809
AB Receptor gated Ca2+ entry has been associated with transient receptor potential (TRP) proteins encoded by several different genes. Here, we compare expression of mRNA for TRP isoforms encoded by genes TRP1-6 in the rat substantia nigra and whole brain. The substantia nigra and the whole brain expressed mRNA predominantly for TRP3 and TRP6. The levels of TRP1, 2, 4 and 5 were very low in both. The TRP6 mRNA levels in substantia nigra and the whole brain were comparable while those for TRP3 were significantly lower in substantia nigra than in the whole brain. Thus substantia nigra differs from the whole brain in its TRP expression.

L1 ANSWER 12 OF 19 MEDLINE on STN
AN 2001226349 MEDLINE
DN 21113398 PubMed ID: 11179201
TI The **transient receptor potential protein** homologue TRP6 is the essential component of vascular alpha(1)-adrenoceptor-activated Ca(2+)-permeable cation channel.
CM Comment in: Circ Res. 2001 Feb 16;88(3):256-9
AU Inoue R; Okada T; Onoue H; Hara Y; Shimizu S; Naitoh S; Ito Y; Mori Y
CS Department of Pharmacology, Graduate School of Medical Sciences, Kyushu University, Fukuoka.. inouery@pharmaco.med.kyushu-u.ac.jp
SO CIRCULATION RESEARCH, (2001 Feb 16) 88 (3) 325-32.
Journal code: 0047103. ISSN: 1524-4571.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200104
ED Entered STN: 20010502
Last Updated on STN: 20010521
Entered Medline: 20010426
AB The DROSOPHILA: **transient receptor potential protein** (TRP) and its mammalian homologues are thought to be

Ca(2+)-permeable cation channels activated by G protein (G(q/11))-coupled receptors and are regarded as an interesting molecular model for the Ca(2+) entry mechanisms associated with stimulated phosphoinositide turnover and store depletion. However, there is little unequivocal evidence linking mammalian TRPs with particular native functions. In this study, we have found that heterologous expression of murine TRP6 in HEK293 cells reproduces almost exactly the essential biophysical and pharmacological properties of alpha(1)-adrenoceptor-activated nonselective cation channels (alpha(1)-AR-NSCC) previously identified in rabbit portal vein smooth muscle. Such properties include activation by diacylglycerol; S-shaped current-voltage relationship; high divalent cation permeability; unitary conductance of 25 to 30 pS and augmentation by flufenamate and Ca(2+); and blockade by Cd(2+), La(3+), Gd(3+), SK&F96365, and amiloride. Reverse transcriptase-polymerase chain reaction and confocal laser scanning microscopy using TRP6-specific primers and antisera revealed that the level of TRP6 mRNA expression was remarkably high in both murine and rabbit portal vein smooth muscles as compared with other TRP subtypes, and the immunoreactivity to TRP6 protein was localized near the sarcolemmal region of single rabbit portal vein myocytes. Furthermore, treatment of primary cultured portal vein myocytes with TRP6 antisense oligonucleotides resulted in marked inhibition of TRP6 protein immunoreactivity as well as selective suppression of alpha(1)-adrenoceptor-activated, store depletion-independent cation current and Ba(2+) influx. These results strongly indicate that TRP6 is the essential component of the alpha(1)-AR-NSCC, which may serve as a store depletion-independent Ca(2+) entry pathway during increased sympathetic activity.

L1 ANSWER 13 OF 19 MEDLINE on STN
AN 2001148003 MEDLINE
DN 21099836 PubMed ID: 11163362
TI Alternative splice variants of hTrp4 differentially interact with the C-terminal portion of the inositol 1,4,5-trisphosphate receptors.
AU Mery L; Magnino F; Schmidt K; Krause K H; Dufour J F
CS Division of Infectious Diseases, Geneva University Hospital, Switzerland.
SO FEBS LETTERS, (2001 Jan 5) 487 (3) 377-83.
Journal code: 0155157. ISSN: 0014-5793.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200103
ED Entered STN: 20010404
Last Updated on STN: 20010404
Entered Medline: 20010315
AB The molecular basis of capacitative (or store-operated) Ca2+ entry is still subject to debate. The **transient receptor potential proteins** have been hypothesized to be structural components of store-operated Ca2+ channels and recent evidence suggests that Trp3 and its closely related homolog Trp6 are gated by the N-terminal region of the inositol 1,4,5-triphosphate receptors (InsP3R). In this study, we report the existence of two isoforms of the human Trp4 protein, referred to as alpha-hTrp4 and beta-hTrp4. The shorter variant beta-hTrp4 is generated through alternative splicing and lacks the C-terminal amino acids G785-S868. Using a yeast two-hybrid assay and glutathione-S-transferase-pulldown experiments, we found that the C-terminus of alpha-hTrp4, but not of beta-hTrp4, associates in vitro with the C-terminal domain of the InsP(3) receptors type 1, 2 and 3. Thus, we describe a novel interaction between Trp proteins and InsP3R and we provide evidence suggesting that the formation of hTrp4-InsP3R complexes may be regulated by alternative splicing.

L1 ANSWER 14 OF 19 MEDLINE on STN

AN 2001082647 MEDLINE
DN 20538370 PubMed ID: 10980191
TI Expression of truncated **transient receptor potential protein** 1alpha (Trp1alpha): evidence that the Trp1 C terminus modulates store-operated Ca2+ entry.
AU Singh B B; Liu X; Ambudkar I S
CS Secretory Physiology Section, Gene Therapy and Therapeutics Branch, NIDCR, National Institutes of Health, Bethesda, Maryland 20892, USA.
SO JOURNAL OF BIOLOGICAL CHEMISTRY, (2000 Nov 24) 275 (47) 36483-6.
Journal code: 2985121R. ISSN: 0021-9258.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200101
ED Entered STN: 20010322
Last Updated on STN: 20010322
Entered Medline: 20010108
AB **Transient receptor potential protein** 1 (Trp1) has been proposed as a component of the store-operated Ca(2+) entry (SOCE) channel. However, the exact mechanism by which Trp1 is regulated by store depletion is not known. Here, we examined the role of the Trp1 C-terminal domain in SOCE by expressing hTrp1alpha lacking amino acids 664-793 (DeltaTrp1alpha) or full-length hTrp1alpha in the HSG (human submandibular gland) cell line. Both carbachol (CCh) and thapsigargin (Tg) activated sustained Ca(2+) influx in control (nontransfected), DeltaTrp1alpha-, and Trp1alpha-expressing cells. Sustained [Ca(2+)](i), following stimulation with either Tg or CCh in DeltaTrp1alpha-expressing cells, was about 1.5-2-fold higher than in Trp1alpha-expressing cells and 4-fold higher than in control cells. Importantly, (i) basal Ca(2+) influx and (ii) Tg- or CCh-stimulated internal Ca(2+) release were similar in all the cells. A similar increase in Tg-stimulated Ca(2+) influx was seen in cells expressing Delta2Trp1alpha, lacking the C-terminal domain amino acid 649-793, which includes the EWKFAR sequence. Further, both inositol 1,4,5-trisphosphate receptor-3 and caveolin-1 were immunoprecipitated with DeltaTrp1alpha and Trp1alpha. In aggregate, these data suggest that (i) the EWKFAR sequence does not contribute significantly to the Trp1-associated increase in SOCE, and (ii) the Trp1 C-terminal region, amino acids 664-793, is involved in the modulation of SOCE.

L1 ANSWER 15 OF 19 MEDLINE on STN
AN 2000472607 MEDLINE
DN 20381044 PubMed ID: 10920270
TI Store depletion by caffeine/ryanodine activates capacitative Ca(2+) entry in nonexcitable A549 cells.
AU Xue H H; Zhao D M; Suda T; Uchida C; Oda T; Chida K; Ichiyama A; Nakamura H
CS First Department of Biochemistry, and Second Division, Department of Internal Medicine, Hamamatsu University School of Medicine, Handa-cho, Hamamatsu, Shizuoka 431-3192, Japan.. xueh@nhlbi.nih.gov
SO JOURNAL OF BIOCHEMISTRY, (2000 Aug) 128 (2) 329-36.
Journal code: 0376600. ISSN: 0021-924X.
CY Japan
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200010
ED Entered STN: 20001012
Last Updated on STN: 20001012
Entered Medline: 20001003
AB Capacitative Ca(2+) entry is essential for refilling intracellular Ca(2+) stores and is thought to be regulated primarily by inositol 1,

4,5-trisphosphate (IP(3))-sensitive stores in nonexcitable cells. In nonexcitable A549 cells, the application of caffeine or ryanodine induces Ca(2+) release in the absence of extracellular Ca(2+) similar to that induced by thapsigargin (Tg), and Ca(2+) entry occurs upon the readdition of extracellular Ca(2+). The channels thus activated are also permeable to Mn(2+). The channels responsible for this effect appear to be activated by the depletion of caffeine/ryanodine-sensitive stores per se, as evidenced by the activation even in the absence of increased intracellular Ca(2+) concentration. Tg pretreatment abrogates the response to caffeine/ryanodine, whereas Tg application subsequent to caffeine/ryanodine treatment induces further Ca(2+) release. The response to caffeine/ryanodine is also abolished by initial ATP application, whereas ATP added subsequent to caffeine/ryanodine induces additional Ca(2+) release. RT-PCR analyses showed the expression of a type 1 ryanodine receptor, two human homologues of **transient receptor potential protein** (hTrp1 and hTrp6), as well as all three types of the IP(3) receptor. These results suggest that in A549 cells, (i) capacitative Ca(2+) entry can also be regulated by caffeine/ryanodine-sensitive stores, and (ii) the RyR-gated stores interact functionally with those sensitive to IP(3), probably via Ca(2+)-induced Ca(2+) release.

L1 ANSWER 16 OF 19 MEDLINE on STN
AN 2000412541 MEDLINE
DN 20366135 PubMed ID: 10903843
TI Mtr1, a novel biallelically expressed gene in the center of the mouse distal chromosome 7 imprinting cluster, is a member of the Trp gene family.
AU Enklaar T; Esswein M; Oswald M; Hilbert K; Winterpacht A; Higgins M; Zabel B; Prawitt D
CS Children's Hospital, University of Mainz, Langenbeckstrasse 1, Mainz, D-55101, Germany.. enklaar@wserv.kinder.klinik.uni-mainz.de
NC CA63333 (NCI)
SO GENOMICS, (2000 Jul 15) 67 (2) 179-87.
Journal code: 8800135. ISSN: 0888-7543.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200008
ED Entered STN: 20000907
Last Updated on STN: 20000907
Entered Medline: 20000829
AB We recently described a novel putative Ca(2+) channel gene, MTR1, which shows a high level of homology to the human TRPC7 gene and the melastatin 1 (MLSN1) gene, another Trp (**transient receptor potential protein**)-related gene whose transcript was found to be downregulated in metastatic melanomas. It maps to human chromosome band 11p15.5, which is associated with the Beckwith-Wiedemann syndrome and predisposition to a variety of neoplasias. Here we report the isolation and characterization of the murine orthologue Mtr1. The chromosomal localization on distal chromosome 7 places it in a cluster of imprinted genes, flanked by the previously described Tapa1 and Kcnq1 genes. The Mtr1 gene encodes a 4.4-kb transcript, present in a variety of fetal and adult tissues. The putative open reading frame consists of 24 exons, encoding 1158 amino acids. Transmembrane prediction algorithms indicate the presence of six membrane-spanning domains in the proposed protein. Imprinting analysis, using RT-PCR on RNA from reciprocal mouse crosses harboring a sequence polymorphism, revealed biallelic expression of Mtr1 transcripts at all stages and tissues examined.

L1 ANSWER 17 OF 19 MEDLINE on STN
AN 1999419008 MEDLINE
DN 99419008 PubMed ID: 10488066
TI Molecular and functional characterization of a novel mouse **transient receptor potential protein** homologue TRP7. Ca(2+)-permeable cation channel that is constitutively activated and enhanced by stimulation of G protein-coupled receptor.
AU Okada T; Inoue R; Yamazaki K; Maeda A; Kurosaki T; Yamakuni T; Tanaka I; Shimizu S; Ikenaka K; Imoto K; Mori Y
CS Laboratory of Humoral Information, Department of Information Physiology, National Institute for Physiological Sciences, Okazaki 444-8585, Japan.
SO JOURNAL OF BIOLOGICAL CHEMISTRY, (1999 Sep 24) 274 (39) 27359-70. Journal code: 2985121R. ISSN: 0021-9258.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
OS GENBANK-AF139923
EM 199911
ED Entered STN: 20000111
Last Updated on STN: 20000111
Entered Medline: 19991104
AB Characterization of mammalian homologues of Drosophila **transient receptor potential protein** (TRP) is an important clue to understand molecular mechanisms underlying Ca(2+) influx activated in response to stimulation of G(q) protein-coupled receptors in vertebrate cells. Here we have isolated cDNA encoding a novel seventh mammalian TRP homologue, TRP7, from mouse brain. TRP7 showed abundant RNA expression in the heart, lung, and eye and moderate expression in the brain, spleen, and testis. TRP7 recombinantly expressed in human embryonic kidney cells exhibited distinctive functional features, compared with other TRP homologues. Basal influx activity accompanied by reduction in Ca(2+) release from internal stores was characteristic of TRP7-expressing cells but was by far less significant in cells expressing TRP3, which is structurally the closest to TRP7 in the TRP family. TRP7 induced Ca(2+) influx in response to ATP receptor stimulation at ATP concentrations lower than those necessary for activation of TRP3 and for Ca(2+) release from the intracellular store, which suggests that the TRP7 channel is activated independently of Ca(2+) release. In fact, TRP7 expression did not affect capacitative Ca(2+) entry induced by thapsigargin, whereas TRP7 greatly potentiated Mn(2+) influx induced by diacylglycerols without involvement of protein kinase C. Nystatin-perforated and conventional whole-cell patch clamp recordings from TRP7-expressing cells demonstrated the constitutively activated and ATP-enhanced inward cation currents, both of which were initially blocked and then subsequently facilitated by extracellular Ca(2+) at a physiological concentration. Impairment of TRP7 currents by internal perfusion of the Ca(2+) chelator 1,2-bis(2-aminophenoxy)ethane-N,N,N',N'-tetraacetic acid revealed an essential role of intracellular Ca(2+) in activation of TRP7, and their potent activation by the diacylglycerol analogue suggests that the TRP7 channel is a new member of diacylglycerol-activated cation channels. Relative permeabilities indicate that TRP7 is slightly selective to divalent cations. Thus, our findings reveal an interesting correspondence of TRP7 to the background and receptor stimulation-induced cation currents in various native systems.

L1 ANSWER 18 OF 19 MEDLINE on STN
AN 1999306853 MEDLINE
DN 99306853 PubMed ID: 10377243
TI Stimulation of Drosophila TrpL by capacitative Ca2+ entry.
AU Estacion M; Sinkins W G; Schilling W P

CS Rammelkamp Center for Education and Research, MetroHealth Medical Center, and Department of Physiology and Biophysics, Case Western Reserve University School of Medicine, 2500 MetroHealth Drive, Cleveland, OH 44109-1998, USA.
NC GM52019 (NIGMS)
SO BIOCHEMICAL JOURNAL, (1999 Jul 1) 341 (Pt 1) 41-9.
Journal code: 2984726R. ISSN: 0264-6021.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199909
ED Entered STN: 19990925
Last Updated on STN: 19990925
Entered Medline: 19990903
AB Trp-like protein (TrpL, where Trp is **transient receptor -potential protein**) of Drosophila, a non-selective cation channel activated in photoreceptor cells by a phospholipase C-dependent mechanism, is thought to be a prototypical receptor-activated channel. Our previous studies showed that TrpL channels are not activated by depletion of internal Ca2+ stores when expressed in Sf9 cells. Using fura-2 to measure cation influx via TrpL, and cell-attached patch recordings to monitor TrpL single-channel activity directly, we have found a thapsigargin-induced increase in TrpL activity in the presence of extracellular bivalent cations, with Ca2+>Sr2+>> Ba2+. The increase in TrpL channel activity was blocked by concentrations of La3+ that completely inhibited endogenous capacitative Ca2+ entry (CCE), but have no effect on TrpL, suggesting that TrpL exhibits trans-stimulation by cation entry via CCE. TrpL has two putative calmodulin (CaM)-binding domains, designated CBS-1 and CBS-2. To determine which site may be required for stimulation of TrpL by the cytosolic free Ca2+ concentration ([Ca2+]i), a chimaeric construct was created in which the C-terminal domain of TrpL containing CBS-2 was attached to human TrpC1, a short homologue of Trp that is not activated by depletion of internal Ca2+ stores or by a rise in [Ca2+]i. This gain-of-function mutant, designated TrpC1-TrpL, exhibited trans-stimulation by Ca2+ entry via CCE. Examination of CaM binding in gel-overlay experiments showed that TrpL and the TrpC1-TrpL chimaera bound CaM, but TrpC1 or a truncated version of TrpL lacking CBS-2 did not. These results suggest that only CBS-2 binds CaM in native TrpL and that the C-terminal domain containing this site is important for trans-stimulation of TrpL by CCE.

L1 ANSWER 19 OF 19 MEDLINE on STN
AN 97157494 MEDLINE
DN 97157494 PubMed ID: 9003779
TI The **transient receptor potential protein** (Trp), a putative store-operated Ca2+ channel essential for phosphoinositide-mediated photoreception, forms a signaling complex with NorpA, InaC and InaD.
AU Huber A; Sander P; Gobert A; Bahner M; Hermann R; Paulsen R
CS Zoological Institute I, University of Karlsruhe, Germany.
SO EMBO JOURNAL, (1996 Dec 16) 15 (24) 7036-45.
Journal code: 8208664. ISSN: 0261-4189.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
OS GENBANK-Z80230
EM 199702
ED Entered STN: 19970227
Last Updated on STN: 19980206
Entered Medline: 19970213

AB The **transient receptor potential protein** (Trp) is a putative capacitative Ca2+ entry channel present in fly photoreceptors, which use the inositol 1,4,5-trisphosphate (InsP3) signaling pathway for phototransduction. By immunoprecipitation studies, we find that Trp is associated into a multiprotein complex with the norpA-encoded phospholipase C, an eye-specific protein kinase C (InaC) and with the InaD protein (InaD). InaD is a putative substrate of InaC and contains two PDZ repeats, putative protein-protein interaction domains. These proteins are present in the photoreceptor membrane at about equimolar ratios. The Trp homolog analyzed here is isolated together with NorpA, InaC and InaD from blowfly (Calliphora) photoreceptors. Compared to Drosophila Trp, the Calliphora Trp homolog displays 77% amino acid identity. The highest sequence conservation is found in the region that contains the putative transmembrane domains S1-S6 (91% amino acid identity). As investigated by immunogold labeling with specific antibodies directed against Trp and InaD, the Trp signaling complex is located in the microvillar membranes of the photoreceptor cells. The spatial distribution of the signaling complex argues against a direct conformational coupling of Trp to an InsP3 receptor supposed to be present in the membrane of internal photoreceptor Ca2+ stores. It is suggested that the organization of signal transducing proteins into a multiprotein complex provides the structural basis for an efficient and fast activation and regulation of Ca2+ entry through the Trp channel.